

What is claimed is:

1. A decoding apparatus comprising:
 - 2 reception means for receiving data on a
 - 3 dedicated physical control channel and data on a
 - 4 dedicated physical data channel, which are coded into a
 - 5 complex code of a single system which is to be
 - 6 transmitted as an uplink signal from a mobile unit to a
 - 7 base station in a 3rd generation cell phone system;
 - 8 TFCI decoding characteristic feedback means
 - 9 for determining TFCI decoding characteristics of a coded
 - 10 TFCI code on the dedicated physical control channel; and
 - 11 dedicated physical data channel correcting
 - 12 means for performing data correction for the dedicated
 - 13 physical data channel on the basis of a determination
 - 14 result on the TFCI decoding characteristics.

2. An apparatus according to claim 1, wherein
 - 2 said TFCI decoding characteristic feedback
 - 3 means comprises
 - 4 dedicated channel control means for
 - 5 controlling a dedicated channel, outputting a TFCI count
 - 6 corresponding to a service, and outputting a decoding
 - 7 parameter corresponding to a received TFCI value,
 - 8 data correcting means for processing a
 - 9 correction value calculated from TFCI decoding
 - 10 characteristics of a dedicated physical control channel

11 with respect to data on a dedicated physical data
12 channel which is received from a mobile unit,
13 de-interleave rate de-matching means for
14 channel-decoding an output from said data correcting
15 means on the basis of a decoding parameter from said
16 dedicated channel control means, and
17 error correcting/decoding means for decoding
18 an output from said de-interleave rate de-matching means
19 while performing error correction for the output to
20 obtain decoded data on the dedicated physical data
21 channel, and
22 said dedicated physical data channel
23 correcting means comprises
24 symbol data determining means for
25 extracting/separating a TFCI code from data on a
26 dedicated physical control channel,
27 soft decision TFCI decoding means for
28 TFCI-decoding a TFCI code output from said symbol data
29 determining means on the basis of a TFCI count from said
30 dedicated channel control means, transmitting an
31 obtained TFCI value to said dedicated channel control
32 means, and outputting correlation values with a Walsh
33 quadrature vector at the time of TFCI decoding,
34 correlation value characteristic storage means
35 for sequentially storing correlation values output from
36 said soft decision TFCI decoding means, and
37 correction value calculating means for

38 determining TFCI decoding characteristics from a
39 plurality of correlation values stored in said
40 correlation value characteristic storage means,
41 calculating the correction value, and outputting the
42 correction value to said data correcting means.

3. An apparatus according to claim 2, wherein
2 said soft decision TFCI decoding means comprises
3 data interchanging means for changing a data
4 order of a reception TFCI code to allow the code to be
5 subjected to fast Hadamard transform as a Walsh
6 quadrature vector,
7 a mask code correlation table which is a code
8 table of 16 combinations of mask codes in a TFCI code
9 which are obtained by mod2 addition,
10 mask code correlation calculating means for
11 calculating correlations between an output code from
12 said data interchanging means and said mask code
13 correlation table,
14 fast Hadamard transform means for performing
15 Hadamard transform of a code output from said mask code
16 correlation calculating means,
17 peak correlation value determining means for
18 determining an absolute peak value of
19 Hadamard-transformed data output from said fast Hadamard
20 transform means, performing positive/negative
21 determination on the peak value, and determining an

22 index thereof to obtain correlation values with a Walsh
23 quadrature vector at the time of TFCI decoding, and
24 TFCI determining means for determining a TFCI
25 value from a determination result from said peak
26 correlation value determining means.

4. An apparatus according to claim 3, wherein
2 said soft decision TFCI decoding means
3 comprises
4 TFCI code generating means for generating a
5 TFCI code from a TFCI value obtained by said TFCI
6 determining means,
7 hard decision TFCI code comparing means for
8 comparing a TFCI code generated by said TFCI code
9 generating means with a TFCI code input to said soft
10 decision TFCI decoding means to determine whether an
11 error has occurred, and
12 said correction value calculating means
13 controls calculation of the correction value in
14 accordance with an error determination result obtained
15 by said hard decision TFCI code comparing means.

5. A radio base station apparatus comprising a
2 decoding apparatus including:
3 reception means for receiving data on a
4 dedicated physical control channel and data on a
5 dedicated physical data channel, which are coded into a

6 complex code of a single system which is to be
7 transmitted as an uplink signal from a mobile unit to a
8 base station in a 3rd generation cell phone system;
9 TFCI decoding characteristic feedback means
10 for determining TFCI decoding characteristics of a coded
11 TFCI code on the dedicated physical control channel; and
12 dedicated physical data channel correcting
13 means for performing data correction for the dedicated
14 physical data channel on the basis of a determination
15 result on the TFCI decoding characteristics.

6. A decoding method comprising:
2 the first step of receiving data on a
3 dedicated physical control channel and data on a
4 dedicated physical data channel, which are coded into a
5 complex code of a single system which is to be
6 transmitted as an uplink signal from a mobile unit to a
7 base station in a 3rd generation cell phone system;
8 the second step of determining TFCI decoding
9 characteristics of a coded TFCI code on the dedicated
10 physical control channel; and
11 the third step of performing data correction
12 for the dedicated physical data channel on the basis of
13 a determination result on the TFCI decoding
14 characteristics.

7. A method according to claim 6, wherein the

2 second step comprises
3 the step of extracting/separating a TFCI code
4 from received data on a dedicated physical control
5 channel,
6 the step of TFCI-decoding the TFCI code,
7 obtaining correlation values with a Walsh quadrature
8 vector, and sequentially storing the correlation values,
9 the step of determining TFCI decoding
10 characteristics from a plurality of stored correlation
11 values, and
12 the step of calculating a correction value for
13 data correction on the dedicated physical data channel.

8. A method according to claim 7, wherein the
2 second step comprises
3 the step of changing a data order of a
4 reception TFCI code to allow the code to be subjected to
5 fast Hadamard transform as a Walsh quadrature vector,
6 the step of calculating a correlation between
7 the TFCI code after interchanging and a preset code
8 table of 16 combinations of mask codes in a TFCI code
9 which are obtained by mod2, and performing fast Hadamard
10 transform, and
11 the step of determining an absolute peak value
12 of Hadamard-transformed data, performing
13 positive/negative determination on the peak value, and
14 determining an index thereof to obtain correlation

15 values with a Walsh quadrature vector at the time of the
16 TFCI decoding.

9. A method according to claim 8, wherein the
2 second step comprises
3 the step of generating a TFCI code in
4 accordance with a TFCI value obtained from determination
5 results on the absolute peak value of
6 Hadamard-transformed data, positive/negative decision on
7 the peak value, and the index thereof,
8 the step of determining the presence/absence
9 of an error by comparison with the reception TFCI code,
10 and
11 the step of controlling calculation of the
12 correction value in accordance with the error
13 determination result.

10. An apparatus according to claim 1, wherein
2 said apparatus further comprises reception SIR
3 measuring means for measuring a reception SIR from a
4 known pilot symbol on the dedicated physical control
5 channel, and
6 said dedicated physical data channel
7 correcting means performs data correction for the
8 dedicated physical data channel on the basis of a
9 determination result on the TFCI decoding
10 characteristics and the measurement result on the

11 reception SIR.

11. A radio base station apparatus comprising a
2 decoding apparatus including:
3 reception means for receiving data on a
4 dedicated physical control channel and data on a
5 dedicated physical data channel, which are coded into a
6 complex code of a single system which is to be
7 transmitted as an uplink signal from a mobile unit to a
8 base station in a 3rd generation cell phone system;
9 TFCI decoding characteristic feedback means
10 for determining TFCI decoding characteristics of a coded
11 TFCI code on the dedicated physical control channel;
12 reception SIR measuring means for measuring a
13 reception SIR from a known pilot signal on the dedicated
14 physical control channel; and
15 dedicated physical data channel correcting
16 means for performing data correction for the dedicated
17 physical data channel on the basis of a determination
18 result on the TFCI decoding characteristics and the
19 measurement result on the reception SIR.

12. A method according to claim 6, wherein
2 the method further comprises the step of
3 measuring a reception SIR from a known pilot signal on
4 the dedicated physical control channel, and
5 in the third step, data correction is

6 performed for the dedicated physical data channel on the
7 basis of the determination result on the TFCI decoding
8 characteristics and the measurement result on the
9 reception SIR.